

TITLE OF THE INVENTION  
GOLF BALL SUPPORT BODY

BACKGROUND OF THE INVENTION

1. Field of the Invention

5       The present invention relates to a golf ball support body removably attached to a leg body.

2. Description of the Prior Art

Japanese Utility Model Laid-Open Hei No. 5-86370 discloses a golf tee comprising ball support section including a number of circularly arranged  
10   upward projections adapted to support a golf ball on the circularly arranged front ends thereof. This type of golf tee is made of synthetic resin as an integral body. Further, because of its form, its production cost is high as compared with a conventional golf tee of simple shape in which the upper end of its bar-like leg is diametrically enlarged to form a dish-like ball  
15   support section. Therefore, in the case of damage, the whole has to be exchanged, incurring a relatively high cost.

On the other hand, Japanese Utility Model Publication No. 402 discloses an exchangeable golf tee so designed that the upper end of its shaft-like leg is removably inserted into the lower portion of a ball support  
20   section made of rubber. Further, Japanese Patent Laid-Open No. 2000-189549 discloses an exchangeable golf tee so designed that the upper end of its shaft-like leg is removably inserted into the lower portion of a ball support section made of plastic material. These golf tees can be used by exchanging the ball support sections; however, when a golf ball is supported  
25   thereon and hit, the ball support section is likely to be separated from the

leg and lost.

## SUMMARY OF THE INVENTION

The object of the present invention is to provide a golf ball support body easily removably mounted on the leg body of an existing tee or the like, and so designed that when a golf ball is supported thereon and hit, the ball support section is prevented from separating from the leg body.

(A-1) To achieve the above object, the invention provides:

a golf ball support body adapted to be removably attached to a leg body having a leg adapted to be inserted into the ground for standing by itself and a horizontally enlarged section disposed above the leg,

said golf ball support body comprising a ball support section in the upper end, a large-sized inner section disposed below the ball support section for receiving the horizontally enlarged section of said leg body, a small-sized inner section disposed below said large-sized inner section for insertion-

holding the lower portion of said leg body disposed below the horizontally enlarged section so as to prevent downward separation of the leg body, and a separation preventive section disposed in the upper portion of said large-sized inner section for preventing upward separation of said leg body, and said golf ball support body being able to be attached to the leg body in a state in which said lower portion of said leg body is held by the small-sized inner section and in which said horizontally enlarged section is received in said large-sized inner section so that upward separation of said leg body is prevented by said separation preventive section.

This golf ball support body is attached to the upper portion of the leg body in a state in which the lower section positioned below the horizontally

enlarged section in the leg body of an existing tee or the like is inserted and held in the small-sized inner section to prevent downward separation of the leg body and in which the horizontally enlarged section of the leg body is received in the large-sized inner section to prevent upward separation of the leg body by the separation preventive section, so as to be ready to support a golf ball on the ball support section.

The golf ball support body of the invention is easily removably mounted on the leg body of an existing tee or the like and the ball support section is prevented from separating from the leg body when a golf ball is supported thereon and hit.

In addition, descriptions concerning vertical positional relation entered in the specification are based on the vertical positional relation in a state in which a golf ball support body is used for hitting a golf ball, that is, a state in which the golf ball support body is attached to the leg body and in which the leg of the leg body is inserted into the ground for standing by itself to support a golf ball on the ball support section.

(A-2) Further, the invention provides:

a golf ball support body as set forth in Claim 1, wherein it comprises an upper structure having said ball support section, separation preventive section, and large-sized inner section, a lower holding section having said small-sized inner section, and a connecting section for connecting said upper structure and lower holding section, the lower side of the large-sized inner section in said upper structure is contracted to form a downward opening, and said small-sized inner section having an upward opening,

a laterally opened section for inserting the leg of said leg body through the small-sized inner section of the lower holding section from the upward opening between the downward opening in said upper structure and the upward opening in said lower holding section, and for inserting the horizontally enlarged section of said leg body into the large-sized inner section from the downward opening in said upper structure.

In this case, between the downward opening in said upper structure and the upward opening in said lower holding section, and through the laterally opened section, the leg of said leg body is inserted through the small-sized inner section from the upward opening in the lower holding section, and the horizontally enlarged section of the leg body is inserted into the large-sized inner section from the downward opening in the upper structure. Thereby, in a state in which the lower portion positioned below the horizontally enlarged section in the leg body is inserted through the small-sized inner section and held thereinto to prevent downward separation of the leg body and in which the horizontally enlarged section of the leg body is received in the large-sized inner section to prevent upward separation of the leg body is prevented by the separation preventive section, the golf ball support body is attached to the upper portion of the leg body, so as to be ready to support a golf ball on the ball support section. In addition, a plurality of said connecting sections may be provided. For example, a plurality of substantially parallel connecting section may be used to connect the upper structure and the lower holding section. More specifically, for example, two places on opposite sides of the downward opening in the upper structure and two places on opposite sides of the upward opening in the lower holding

section may be connected, respectively, by connecting sections; further, it is possible for one more place to have a connecting section. In each case, the laterally opened section may extends over not less than about three fifths of the entire circumference of the downward opening in the upper structure, for example. Preferably, not less than about one half, more preferably, not less than about two thirds.

This golf ball support body may be arranged such that said connecting section is in the form of a band with a width not more than one third (preferably, not more than one fourth; more preferably, not more than one sixth) of the entire circumference of the downward opening in the upper structure, and connects the outer side of the downward opening in the upper structure to the outer side of the upward opening in the lower holding section, and of the portions located between the downward opening in the upper structure and the upward opening in the lower holding section, those other than the connecting section constitute said laterally opened section.

The connecting section is in the form of a band for connecting the outer side of the downward opening in the large-sized inner section to the outer side of the upward opening in the lower holding section, the width being not more than one third of the entire circumference of the downward opening in the large-sized inner section, and of the portions located between the downward opening in the upper structure and the upward opening in the lower holding section, those other than the connecting section constitute said laterally opened section. Since the degree of opening in the laterally opened section is large and the connecting section is prevented from closing the downward opening and upward opening, this arrangement is suitable for

attaching the golf ball support body to the upper portion of the leg body by inserting the leg of the leg body through the small-sized inner section through the laterally opened section from the upward opening and inserting the horizontally enlarged section of the leg body into the large-sized inner  
5 section from the downward opening.

(A-3) Said golf ball support body may be arranged such that said connecting section is made of elastic material, so that when the leg of said leg body is inserted into the small-sized inner section of the lower holding section from the upward opening, the connecting section is elastically  
10 deformed to allow said upper structure to be temporally laterally displaced.

By elastically deforming the connecting section to temporally laterally displace the upper structure, it is possible to fully open the laterally opened section not only laterally but also upwardly. Therefore, when the leg of said leg body is inserted into the small-sized inner section of the lower  
15 holding section from the upward opening through the laterally opened section, the upper structure interfering therewith can be avoided as much as possible even if the distance between the upper structure and the lower holding section, that is, the vertical dimension of the laterally opened section is relatively small. After the leg has been inserted through, the  
20 deformation of the connecting section can be cancelled to insert the horizontally enlarged section into the large-sized inner section from the downward opening in the upper structure. Accordingly, this arrangement is suitable for attaching the golf ball support body to the upper portion of the leg body.

25 In addition, the vertical dimension of the laterally opened section may

be on the order of from one to five times the horizontal dimension of the small-sized inner section, for example. Preferably, it is on the order of from 1.5 to three times.

(A-4) Said golf ball support body may be arranged such that at least the outer periphery of the large-sized inner section in said upper structure is made of elastic material, so that the enlargement of the downward opening due to elastic deformation thereof allows insertion and separation of said horizontally enlarged section into and from said large-sized inner section, respectively, through the downward opening.

In this case, the operation of inserting the horizontally enlarged section of the leg body into the large-sized inner section from the downward opening in the upper structure and the operation of separating the horizontally enlarged section through the downward opening can be smoothly effected by the enlargement of the downward opening due to the elastic deformation of the outer periphery of the large-sized inner section, and the receiving and holding of the horizontally enlarged section in the large-sized inner section can be reliably effected by elastic contraction of the downward opening.

(A-5) Further, said golf ball support body may be arranged such that at least the outer periphery of the large-sized inner section in said upper structure is made of elastic material, the outer periphery of the large-sized inner section having one or two or more cuts open to the downward opening, the horizontal gap in the cuts being enlarged by elastic deformation of said outer periphery to allow the horizontal dimension of the downward opening to enlarge.

In this case, the horizontal gap in the cut formed in the outer periphery of the large-sized inner section made of elastic material is enlarged by elastic deformation of the outer periphery of the large-sized inner section, allowing the horizontal dimension of the downward opening to enlarge.

5 Therefore, the operation of inserting the horizontally enlarged section of the leg body into the large-sized inner section from the downward opening in the upper structure and the operation of separating the horizontally enlarged section through the downward opening can be smoothly effected by the enlargement of the downward opening due to the elastic deformation of the  
10 outer periphery of the large-sized inner section, and the receiving and holding of the horizontally enlarged section in the large-sized inner section can be reliably effected by elastic contraction of the outer periphery of the large-sized inner section including the downward opening.

(A-6) Said golf ball support body may be made wholly of elastic  
15 material.

(A-7) Further, said golf ball support body may be arranged such that the ball support section comprises three or more support projections which project substantially upward or upwardly outward, said support projections serving to support a golf ball thereon, said support projections being  
20 positioned above the outer periphery of the large-sized inner section to surround the upper portion of the large-sized inner section.

In this case, a golf ball can be supported on three or more support projections positioned to surround the upper portion of the large-sized inner section in the golf ball support body attached to the upper portion of the leg  
25 body of a tee or the like.



(B-1) Further, the golf ball support body of the invention is a golf ball support body adapted to be removably attached to a leg body having a leg adapted to be inserted into the ground for standing by itself and a horizontally enlarged section disposed above the leg,

5 said golf ball support body comprising

a ball support section at the upper end thereof, whose interior is opened upward and downward,

a large-sized inner section disposed below the ball support section,

an insertion opening and a separation preventive inward projection in the

10 upper portion of said large-sized inner section, said insertion opening being upwardly opened via the interior of said ball support section, and

a leg projection opening disposed below the large-sized inner section, horizontal inner dimension of said leg projection opening being smaller than that of said large-sized inner section,

15 said golf ball support body being able to be attached to the leg body in a state in which at least the lower portion of the leg of said leg body projects beyond said leg projection opening, and in which said horizontally enlarged section is received in said large-sized inner section and prevented by said inward projection from separation.

20 When the leg of the leg body of an existing tee or the like is inserted from the upper portion of the ball support section whose interior is opened upward and downward, the leg projects through the insertion opening in the upper portion of the large-sized inner section, through the large-sized inner section and through the leg projection opening below the  
25 large-sized inner section. Therefore, the horizontally enlarged section

disposed above the leg in the leg body passes through the insertion opening from the ball support section and is received in the large-sized inner section. In this state, the horizontally enlarged section in the leg body is received and held in the large-sized inner section and the separation preventive  
5 inward projection provided in the upper portion of the large-sized inner section is positioned on the upper side of the horizontally enlarged section to prevent upward separation of the horizontally enlarged section, in which state the golf ball support body is attached to the upper portion of the leg body, to be ready to support a golf ball thereon. On the other hand, if the  
10 separation prevention due to the inward projection is cancelled, then, reversely to the above, the golf ball support body can be removed from the leg body.

Further, the golf ball support body of the invention may be a golf ball support body adapted to be removably attached to a leg body having a leg  
15 adapted to be inserted into the ground for standing by itself and a horizontally enlarged section disposed above the leg, said golf ball support body comprising  
a ball support section at the upper end thereof, whose interior is opened upward and downward,  
20 a large-sized inner section disposed below the ball support section,  
a small-sized inner section disposed below said large-sized inner section and communicating with the large-sized inner section, horizontal inner dimension of said small-sized inner section being smaller than that of said large-sized inner section,  
25 an insertion opening and a separation preventive inward projection in the

upper portion of said large-sized inner section, said insertion opening being upwardly opened via the interior of said ball support section, and a leg projection opening below said small-sized inner section, said golf ball support body being able to be attached to the leg body in a state in which at least the lower portion of the leg of said leg body projects beyond said leg projection opening, in which the upper portion of the leg is received in the small-sized inner section, and in which said horizontally enlarged section is received in said large-sized inner section and prevented by said inward projection from separation.

When the leg of the leg body of an existing tee or the like is inserted from the upper portion of the ball support section whose interior is opened upward and downward, the leg passes through the insertion opening in the upper portion of the large-sized inner section, and then through the large-sized inner section and through the small-sized inner section communicating with the lower portion of the large-sized inner section, with the lower portion of the leg projecting out of the leg projection opening below the small-sized inner section. Along therewith, the horizontally enlarged section positioned above the leg in the leg body passes through the insertion opening from the ball support section and is received in the large-sized inner section. In this state, the upper portion of the leg and the horizontally enlarged section in the leg body are received and held in the small-sized inner section and the large-sized inner section, respectively, in the golf ball support body, and in a state in which separation preventive inward projection in the upper portion of the large-sized inner section is positioned on the upper side of the horizontally enlarged section to prevent

upward separation of the horizontally enlarged section, the golf ball support body is attached to the upper portion of the leg body, so as to be ready to support a golf ball on the ball support section. On the other hand, if the separation prevention due to the inward projections is cancelled, then, reversely to the above, the golf ball support body can be removed from the leg body.

These golf ball support bodies are brought into a state in which the leg of the leg body is inserted from the upper portion of the ball support section to project out of the leg projection opening and the horizontally enlarged section is received in the large-sized inner section so that its upward separation is prevented by the inward projection; thus, the golf ball support body can be attached to the upper portion of the leg body to be ready to support a golf ball thereon, and if the separation prevention due to the inward projection is canceled, it can be removed from the leg body; thus, such golf ball support body can be easily removably mounted on the leg body of an existing tee or the like.

(B-2) Said golf ball support body may be arranged such that the ball support section comprises three or more support projections which project substantially upward or upwardly outward, said support projections serving to support a golf ball thereon, said support projections being positioned above the outer periphery of the large-sized inner section to surround the upper portion of the large-sized inner section.

In this case, a golf ball can be supported on three or more support projections positioned to surround the upper portion of the large-sized inner section in the golf ball support body attached to the upper portion of the leg

body of a tee or the like.

(B-3) Said golf ball support body may be arranged such that at least the outer periphery of the small-sized inner section is made of elastic material, the outer periphery of the small-sized inner section having one or  
5 a plurality of slits whose lower ends reach the leg projection opening, the horizontal gap in the slits being enlarged by elastic deformation of said outer periphery to allow the horizontal dimension of the small-sized inner section to enlarge.

In this case, the horizontal gap in the slit formed in the outer periphery  
10 of the small-sized inner section and whose lower end reaches the leg projection opening is capable of enlarging by elastic deformation of the outer periphery of the small-sized inner section to allow the horizontal dimension of the small-sized inner section to enlarge. Therefore, the upper portion of the leg can be held in the small-sized inner section whose  
15 horizontal dimension, even if the horizontal dimension of the leg of the leg body of a tee or the like is large compared with the horizontal dimension of the small-sized inner section during non-deformation, is correspondingly enlarged, thus coping with a change in the dimension of the leg of the leg body of a tee or the like.

20 Further, said golf ball support body may be arranged such that at least the outer peripheries of the small-sized inner section and large-sized inner section are made of elastic material, the upper end or ends of one or two or more said slits reaching the outer periphery of the large-sized inner section, the horizontal gap in said slits being enlarged by elastic deformation of one  
25 or both of said outer peripheries to allow the horizontal dimension of the

small-sized inner section and/or large-sized inner section to enlarge.

In this case, the horizontal gap in the slit formed in the outer periphery of the small-sized inner section and whose lower end reaches the leg projection opening and whose upper end reaches the outer periphery of the large-sized inner section is capable of enlarging by elastic deformation of one or both of the outer peripheries of the small-sized inner section and large-sized inner section to allow the horizontal dimension of the small-sized inner section and/or large-sized inner section to enlarge. Therefore, even if horizontal dimension of the leg of the leg body of a tee or the like and/or the horizontally enlarged section is large as compared with the horizontal dimension of the small-sized inner section and/or large-sized inner section during non-deformation, the upper portion of the leg and/or horizontally enlarged section can be held in the small-sized inner section and/or large-sized inner section whose horizontal dimension is correspondingly enlarged, thus coping with a change in the dimension of the leg of the leg body and/or horizontally enlarged section of a tee or the like.

(B-4) Said golf ball support body may be arranged such that at least the outer periphery of the large-sized inner section is made of elastic material, the outer periphery of said large-sized inner section having one or two or more upwardly opened cuts, the horizontal gap in the cuts being enlarged by elastic deformation of said outer periphery to allow the horizontal dimension of the large-sized inner section to enlarge.

In this case, the outer periphery of said large-sized inner section has one or more upwardly opened cuts, the horizontal gap in the cuts being enlarged by elastic deformation of said outer periphery to allow the

horizontal dimension of the large-sized inner section to enlarge. Therefore, despite the presence, in the upper portion of the large-sized inner section, of the inward projection capable of obstructing the insertion of the horizontally enlarged section into the insertion opening, the large-sized inner section is spread at the time of inserting the horizontally enlarged section into the insertion opening to facilitate such insertion; thus, mounting and dismounting are facilitated.

(B-5) Said golf ball supporting body may be made wholly of elastic material.

In this case, the mounting and dismounting of a golf ball support body on and from the leg body of a tee or the like are facilitated.

(C-1) The golf ball support body of the invention achieving said object is a golf ball support body adapted to be removably attached to a leg body having a leg adapted to be inserted into the ground for standing by itself and a horizontally enlarged section disposed above the leg,

said golf ball support body comprising

a ball support section at the upper end thereof, whose interior is opened upward and downward,

a large-sized inner section disposed below the ball support section,

an insertion opening and a separation preventive section in the upper portion of said large-sized inner section, said insertion opening being upwardly opened via the interior of said ball support section, said separation preventive section being switchable between an inwardly projecting position where it projects inwardly of the large-sized inner section and a non-projecting position located outwardly thereof,

a leg projection opening disposed below the large-sized inner section, horizontal inner dimension of said leg projection opening being smaller than that of said large-sized inner section,

insertion and removal of said leg body into and from said large-sized inner section being effected during the time said separation preventive section is in the non-projecting position,

the leg body being attached in position in a state in which at least the lower portion of the leg of said leg body projects out of said leg projection opening, in which said horizontally enlarged section is received in said large-sized inner section, and in which said separation preventive section is in the inwardly projecting position, in which state the upward separation of the horizontally enlarged section is prevented by the separation preventive section.

When the leg of the leg body of an existing tee or the like is inserted from the upper portion of the ball support section whose interior is opened upward and downward with the separation preventive section put in the non-projecting position, the leg passes through the insertion opening in the upper portion of the large-sized inner section and through the large-sized inner section, projecting out of the leg projection opening below the large-sized inner section. Along therewith, the horizontally enlarged section positioned above the leg of the leg body passes through the insertion opening from the ball support section and is received in the large-sized inner section. In this state, when the separation preventive section is switched to the inwardly projecting position, the separation preventive section, which is provided in the upper portion of the large-sized inner



section, is positioned on the upper side of the horizontally enlarged section to prevent upward separation of the horizontally enlarged section, in which state the golf ball support body is attached to the upper portion of the leg body to be ready to support a golf ball on the ball support section. Further, 5 if the separation preventive section is switched to the non-projecting position, the golf ball support body can be removed from the leg body.

With this golf ball support body, when the separation preventive section is in the non-projecting position, the leg of the leg body is inserted from the upper portion of the ball support section to project out of the leg 10 projection opening, while the horizontally enlarged section is received in the large-sized inner section and the separation preventive section is switched to the inwardly projecting position to prevent upward separation, whereby the golf ball support body can be attached to the upper portion of the leg body to be ready to support a golf ball on the ball support section, 15 and if the separation preventive section is switched to the non-projecting position, it can be removed from the leg body; thus, the golf ball support body can be easily mounted on and dismounted from the leg body of an existing tee or the like.

(C-2) Said golf ball support body may be arranged such that said 20 separation preventive section is supported at its opposite ends by a pair of peripherally spaced fulcrums disposed on the large outer periphery constituting the outer periphery of the large-sized inner section, the dimension of the separation preventive section between said opposite ends is greater than the linear distance between the two fulcrums in a non-loaded 25 state, so that the preventive separation section can be stabilized both in a

state in which it projects inward beyond a straight line connecting the two fulcrums and in a state in which it overhangs outward, and in an intermediate state between the two, the separation preventive section hardly gets stabilized, wherein the separation preventive section assumes, when in  
5 the inwardly projecting state, an inwardly projecting position and assumes, when in the outwardly overhanging state, a non-projecting position.

Said separation preventive section faces both inwardly and outwardly of the large outer periphery (the outer periphery of the large-sized inner section), so that in the non-projecting position, when it is pushed in from  
10 outside the large outer periphery to pass through said intermediate position, it is switched to said inwardly projecting position, and in the inwardly projecting position, when it is pushed out from inside the large outer periphery to pass through said intermediate state, it is switched to said non-projecting position.

15 Further, said golf ball support body may be arranged such that it is made wholly of synthetic resin, and a thin-walled intermediate hinge is formed intermediate between the opposite ends of said separation preventive section, said pair of fulcrums being in the form of thin-walled hinges.

(C-3) Said golf ball support body may be arranged such that the ball  
20 support section comprises three or more support projections which project substantially upward or upwardly outward, said support projections serving to support a golf ball thereon, said support projections being positioned above the large outer periphery to surround the upper portion of the large-sized inner section.

25 In this case, a golf ball can be supported on the three or more support

projections positioned to surround the upper portion of the large-sized inner section in the golf ball support body attached to the upper portion of the leg body of a tee or the like.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a front view.

Fig. 2 is a plan view.

Fig. 3 is a right-hand side view.

Fig. 4 is a bottom view.

Fig. 5 is an end view taken along the line V-V in Fig. 1.

10 Fig. 6 is an end view taken along the line VI-VI in Fig. 2.

Fig. 7 is an end view taken along the line VII-VII in Fig. 1.

Fig. 8 is a front view.

Fig. 9 is a plan view.

Fig. 10 is a bottom view.

15 Fig. 11 is a sectional view taken along the line XI-XI in Fig. 8.

Fig. 12 is an end view taken along the line XII-XII in Fig. 9.

Fig. 13 is a side view.

Fig. 14 is a front view.

Fig. 15 is a plan view.

20 Fig. 16 is a right-hand side view.

Fig. 17 is a bottom view.

Fig. 18 is a longitudinal sectional view.

Fig. 19 is a longitudinal sectional view showing an attachment process.

#### EMBODIMENTS

25 Embodiments of the invention will be described with reference to the

drawings.

(1) Figs. 1 through 7 show a golf ball support body according to an embodiment of the invention; Fig. 1 is a front view; Fig. 2 is a plan view; Fig. 3 is a right-hand side view; Fig. 4 is a bottom view; Fig. 5 is an end view taken along the line V-V in Fig. 1; Fig. 6 is an end view taken along the line VI-VI in Fig. 2; and Fig. 7 is an end view taken along the line VII-VII in Fig. 1.

This golf ball support body S is made wholly of elastomer (elastic material) by integral molding and can be removably attached to an existing golf tee T (leg body) shown in phantom lines; however, the material and the attachment subject are not limited thereto.

The golf tee T is a wooden tee comprising a round bar-like leg T1 whose lower end is conically pointed, and a horizontally enlarged section T2 which is formed on the upper end of the leg T1 and whose outer periphery is upwardly diametrically enlarged substantially in a funnel shape, the upper surface of the horizontally enlarged section T2 being shaped to form a dish-like ball support recess. Though not limited to making of wood, it is preferably made of wood from the standpoint of environmental protection when the golf tee T is lost with ball hitting.

The golf ball support body S comprises a ball support section 10 on its upper end, a large-sized inner section 12 disposed below the ball support section 10, and a small-sized inner section 14 whose horizontal inner dimension is smaller than that of the large-sized inner section 12 and which is disposed below the large-sized inner section 12 to communicate therewith, the support body S being substantially rotation-symmetrical with respect to

the vertical axis. The large-sized inner section 12 substantially corresponds to the upper portion of the horizontally enlarged section T2 of the golf tee T, rather than to the lower portion, while the small-sized inner section 14 substantially corresponds to a portion extending from the upper portion of the leg T1 to the lower portion of the horizontally enlarged section T2 of the golf tee T. In addition, the large-sized inner section 12 is defined by a large diameter outer periphery 22, while the small-sized inner section 14 is defined by a small diameter outer periphery 24. The large-sized and small-sized inner sections 12 and 14 cooperate with each other to define a substantially funnel-shaped interior, while the large diameter and small diameter outer peripheries 22 and 24 cooperate with each other to define a substantially funnel-shaped outer shell. The boundaries between the large-sized and small-sized inner sections 12 and 14, and between the large diameter and small diameter outer peripheries 22 and 24 are not always required to be definite.

The ball support section 10 comprises support projections 10a projecting substantially upward from the large diameter outer periphery 22 and disposed at eight places spaced a central angle of 45 degrees from each other with the center at the vertical axis, and a golf ball will be supported on these support projections 10a. Therefore, the support projections 10a are positioned above the outer periphery of the large-sized inner section 12 to surround the upper portion of the large-sized inner section 12, the interior being opened upward and downward. In addition, the central angle between adjoining support projections 10a may be not more than 170 degrees, preferably not more than 90 degrees. More preferably, it is not

more than 60 degrees.

The upper portion of the large-sized inner section 12 has an insertion opening 12a which upwardly opens through the interior of the ball support section 10 and also has separation preventive inward projections 26 at three  
5 places spaced an equal central angle from each other. In addition, it is preferable to have the separation preventive inward projections 26 at two or more places peripherally spaced from each other with the center at the vertical axis. At least the inward projections 26 or the upper portion of the large diameter outer periphery 22 is preferably made of elastic material.

10 Further, at three places deviated from the inward projections 26 in the large diameter outer periphery 22, there are upwardly opened vertical cuts 28.

Disposed below the small-sized inner section 14 is a leg projection opening 14a, and the small-diameter outer periphery 24, which is the outer  
15 periphery of the small-sized inner section 14, is provided with vertical slit 30 (being vertical is preferable) with its lower end reaching the leg projection opening 14a, said slit 30 reaching the lower portion of the large diameter outer periphery 22, which is the outer periphery of the large-sized inner section 12.

20 In addition, through holes 32 formed in the lower portion of the large diameter outer periphery 22 are required for integral molding using a metal mold.

When the leg T1 of the golf tee T is inserted from above the ball support section 10, the leg T1 passes through the insertion opening 12a in  
25 the upper portion of the large-sized inner section 12, and then through the

large-sized inner section 12 and the small-sized inner section 14 communicating with the lower portion of the large-sized inner section 12, with the lower portion of the leg T1 projecting out of the leg projection opening 14a below the small-sized inner section 14. Along therewith, the horizontally enlarged section T2 of the golf tee T passes through the insertion opening 12a from the ball support section 10 and is received in the large-sized inner section 12. In this state, the upper portion of the leg T1 of the golf tee T is received and held in the small-sized inner section 14 and the horizontally enlarged section T2 of the golf tee T is received and held in the large-sized inner section 12 of the golf ball support body S, and the separation preventive inward projections 26 provided in the upper portion of the large-sized inner section 12 are positioned on the upper side of the upper surface of the horizontally enlarged section T2 to prevent upward separation of the horizontally enlarged section T2.

In this manner, the golf ball support body S is attached to the upper portion of the leg, so as to be ready to support a golf ball on the support projections 10a positioned to surround the upper portion of the large-sized inner section 12 in the ball support section 10. On the other hand, if the separation prevention due to the inward projections 26 is cancelled, then, reversely to the above, the golf ball support body S can be removed from the leg body.

Since the upwardly opened cuts 28 are provided at three places on the large diameter outer periphery 22 and the horizontal gap in the cuts 28 is enlarged by elastic deformation of the large diameter outer periphery 22 to allow the horizontal dimension of the large-sized inner section 12 to enlarge,

it follows that despite the presence, in the upper portion of the large-sized inner section 12, of the inward projections 26 capable of obstructing the insertion of the horizontally enlarged section T2 into the insertion opening 12a, the large-sized inner section 12 is spread at the time of inserting the horizontally enlarged section T2 into the insertion opening 12a to facilitate such insertion; thus, mounting and dismounting are facilitated. In addition, the inward projections are adapted to be changed between an inwardly projecting state and a non-projecting state, so that they assume the non-projecting state during insertion and removal of the leg body and the inwardly projecting state when the leg body is in its attached state, whereby separation is prevented.

Further, the horizontal gap in the slit 30 is enlarged by elastic deformation of one or both of the small and large diameter outer peripheries 24 and 22 to allow the inner diameter of the small-sized inner section 14 and/or large-sized inner section 12 to enlarge. Therefore, even when the outer diameter of the leg T1 and/or horizontally enlarged section T2 of the golf tee T is larger than the inner diameter of the small-sized inner section 14 and/or large-sized inner section 12 when non-deformed, the upper portion of the leg T1 and/or the horizontally enlarged section T2 can be held in the small-sized inner section 14 and/or large-sized inner section 12 having its inner diameter correspondingly enlarged.

(2) Figs. 8 through 13 show golf ball support bodies according to other embodiments of the invention; Fig. 8 is a front view; Fig. 9 is a plan view; Fig. 10 is a bottom view; Fig. 11 is a sectional view taken along the line XI-XI in Fig. 8; Fig. 12 is an end view taken along the line XII-XII in Fig. 9;



and Fig. 13 is a side view.

The golf ball support body S is made wholly of biodegradable synthetic resin (it is not limited thereto) suitable for environmental protection, produced by integral molding, and can be removably attached to an existing  
5 golf tee T (leg body) shown in phantom lines; however, the material and attachment subject are not limited thereto.

The golf ball support body S comprises a ball support section 110 on its upper end, a large inner diameter section 112 (a large-sized inner section) disposed below the ball support section 110, and a leg projection opening  
10 114 whose horizontal inner dimension is smaller than that of the large inner diameter section 112 and which is disposed below the large inner diameter section 112 to communicate therewith, the support body S being substantially rotation-symmetrical with respect to the vertical axis. The large inner diameter section 112 substantially corresponds to the upper  
15 portion of the horizontally enlarged section T2 of the golf tee T, rather than to the lower portion. In addition, the large inner diameter section 112 is defined by the large diameter outer periphery 122 (large outer periphery).

The lower portion of the large inner diameter section 112 is a diametrically contracted section 113 with its inner diameter gradually  
20 downwardly reduced, and disposed below the large inner diameter section 112 is the leg projection opening 114 whose inner diameter (the horizontal inner dimension) is smaller than that of the large inner diameter section 112.

The ball support section 110 comprises support projections 110a projecting substantially upward from the large diameter outer periphery 122  
25 and disposed at ten places spaced a central angle of 36 degrees from each

other with the center at the vertical axis, and a golf ball will be supported on these support projections 110a. Therefore, the support projections 110a are positioned above the outer periphery of the large inner diameter section 112 to surround the upper portion of the large inner diameter section 112, the interior being opened upward and downward. In addition, the central angle between adjoining support projections 110a may be not more than 170 degrees, preferably not more than 90 degrees. More preferably, it is not more than 60 degrees.

The upper portion of the large-sized inner section 112 has an insertion opening 112a which upwardly opens through the interior of the ball support section 110 and also has separation preventive sections 126 at two places spaced an equal central angle from each other. In addition, it is preferable to have the separation preventive sections 126 at two or more places peripherally spaced from each other with the center at the vertical axis.

Each separation preventive section 126, which is made by utilizing part of the large diameter outer periphery 122, is supported at its opposite ends by a pair of peripherally spaced fulcrums 124 disposed on the large diameter outer periphery 122 and is formed at its middle with an intermediate hinge 126a, it being formed as a curved sheet somewhat peripherally curved from the opposite ends toward the middle and standing substantially upright. The intermediate hinge 126a is formed as a thin-walled hinge with a notch defined by an outward opening, providing a substantially vertical turning axis. The fulcrums 124 at the opposite ends are formed as thin-walled hinges with notches defined by outward openings, providing substantially vertical turning axes. Formed above and below the separation preventive

section 126 are fissures 128.

The dimension of the separation preventive section 126 between said opposite ends is greater than the linear distance between the two fulcrums 124 in a non-loaded state, so that the preventive separation section 126 can  
5 be stabilized both in a state (shown in phantom lines in Figs. 11 and 12) in which it projects inward beyond a straight line L connecting the two fulcrums 124 and in a state (shown in solid lines in Figs. 11 and 12) in which it overhangs outward. In an intermediate state between the two, the separation preventive section 126 would thrust the two fulcrums 124 along  
10 the linear line L, hardly getting stabilized. The separation preventive section 126 assumes, when in the inwardly projecting state, an inwardly projecting position (shown in phantom lines in Figs. 11 and 12), and assumes, when in the outwardly overhanging state, a non-projecting position (shown in solid lines in Figs. 11 and 12). In the inwardly projecting  
15 position, the openings provided by the notches in the two fulcrums 124 are enlarged, while the opening provided by the notch in the intermediate hinge 126a are contracted or closed.

The separation preventive section 126 faces both inwardly and outwardly of the large diameter outer periphery 122, so that in the non-  
20 projecting position, when it is pushed in from outside the large diameter outer periphery 122 to pass through the intermediate state, it is switched to the inwardly projecting position, and in the inwardly projecting position, when it is pushed out from inside the large diameter outer periphery 122 to pass through the intermediate state, it is switched to the non-projecting  
25 position.

Downwardly opened vertical cuts 116 are formed in the same peripheral positions as the separation preventive sections 126 in the diametrically contracted section 113. The purpose is to widen the dimensional adaptability to the golf tee T or the like.

5        When the leg T1 of the golf tee T is inserted from above the ball support section 110 with the separation preventive sections 126 placed in the non-projecting position (shown in solid lines in Fig. 11 and 12), the leg T1 passes through the insertion opening 112a in the upper portion of the large inner diameter section 112 and through the large inner diameter  
10 section 112, with the lower portion of the leg T1 projecting out of the leg projection opening 114 below the large diameter section 112. Along therewith, the horizontally enlarged section T2 of the golf tee T passes through the insertion opening 112a from the ball support section 110 and is received in the large inner diameter section 112. In this state, when the  
15 separation preventive sections 126 are pushed in from outside as by the pointed end of another golf tee for switching to the inwardly projecting position (shown in phantom lines in Figs. 11 and 12), the separation preventive sections 126 disposed in the upper portion of the large inner diameter section 112 are positioned on the upper side of the upper surface  
20 of the horizontally enlarged section T2 of the golf tee T to prevent upward separation of the horizontally enlarged section T2.

In this manner, the golf ball support body S is attached to the upper portion of the leg, so as to be ready to support a golf ball on the support projections 110a positioned to surround the upper portion of the large inner  
25 diameter section 112 in the ball support section 110. Further, if the

separation prevention sections 126 are pushed out from inside as by the pointed end of another golf tee for switching to the non-projecting position (shown in solid lines in Figs. 11 and 12), so as to cancel the separation prevention due to the separation preventive sections 126, then, the golf ball support body S can be removed from the golf tee T.

(3) Figs. 14 through 19 show golf ball support bodies according to other embodiments of the invention; Fig. 14 is a front view; Fig. 15 is a plan view; Fig. 16 is a right-hand side view; Fig. 17 is a bottom view; Fig. 18 is a longitudinal sectional view; and Fig. 19 is a longitudinal sectional view showing an attachment process.

This golf ball support body Sc is made wholly of soft synthetic resin (elastic material) by integral molding and can be removably attached to an existing golf tee T (leg body) shown in phantom lines; however, the material and the attachment subject are not limited thereto.

The golf ball support body Sc comprises an upper structure U, a lower holding section L, and a connecting section C for connecting said upper structure U and lower holding section L.

The upper structure U comprises a ball support section 210 on its upper end outer periphery, a large-sized inner section 212 which is disposed below the ball support section 210 and which is substantially rotation-symmetrical with respect to the vertical axis, and a separation preventive section 226 disposed above the large-sized inner section 212 and inwardly of the ball support section 210 for preventing upward separation of the golf tee T. The separation preventive section 226 is in the form of an upwardly projecting annulus, with the middle portion upwardly extending-through

from the large-sized inner section 212. The lower side of the large-sized inner section 212 in the upper structure U has its horizontal inner dimension downwardly contracted in a funnel shape to define a downward opening 214.

The outer periphery of the large-sized inner section 212 is formed with cuts 215 which are opened to the downward opening 214 and which are disposed at positions spaced 90 degrees on both sides with the center at the vertical axis from the connecting section C.

The ball support section 210 comprises support projections 210a projecting substantially upward from the outer periphery of the large-sized inner section 212 and disposed at six places spaced a central angle of 60 degrees with the center at the vertical axis, and a golf ball will be supported on these support projections 210a. Therefore, the support projections 210a are positioned above the outer periphery of the large-sized inner section 212 to surround the upper portion of the large-sized inner section 212. In addition, the central angle between adjoining support projections 210a may be not more than 170 degrees, preferably not more than 90 degrees. More preferably, it is not more than 60 degrees.

The lower holding section L has a vertically extending-through small-sized inner section 216 spaced a predetermined vertical distance below the downward opening 214 and positioned axially with the large-sized inner section 212. The small-sized inner section 216 has a horizontal inner dimension smaller than that the large-sized inner section 212, and holds therein the lower leg T1 extending therethrough with the horizontally enlarged section T2 positioned thereabove, thus preventing downward separation of the golf tee T.

The connecting section C is in the form of a band with a width not more than one eighth of the entire circumference of the downward opening 214 in the upper structure U, and connects the outer side of the downward opening 214 in the upper structure U to the outer side of the upward opening 218 in the small-sized inner section 216 in the lower holding section L in a somewhat upwardly outwardly inclined manner, regulating the positional relation between the upper structure U and the lower holding section L.

Of the portions located between the downward opening 214 in the upper structure U and the upward opening 218 in the lower holding section L, those other than the connecting section C constitute a laterally opened section 220 for inserting the leg T1 of the golf tee T into the small-sized inner section 216 of the lower holding section L from the upward opening 218 and inserting the horizontally enlarged section T2 into the large-sized inner section 212 from the downward opening 214 in the upper structure U.

When it is desired to attach the golf ball support body Sc to the golf tee T, the connecting section C, as shown in Fig. 19, is bent by elastic deformation to displace the upper structure U temporally laterally outward (which has the same meaning as displacing the lower holding section L laterally outward). Thereby, not only laterally but also upwardly can the laterally opened section 220 be sufficiently opened. Therefore, when the leg T1 is downwardly inserted into the small-sized inner section 216 from the upward opening 218 in the lower holding section L through the laterally opened section 220, the upper structure U interfering therewith can be avoided as much as possible even if the distance between the upper structure U and the lower holding section L, that is, the vertical dimension

of the laterally opened section 220 is relatively small, being about twice the diameter of the small-sized inner section 216.

After the leg T1 has been inserted into the small-sized inner section 216, the deformation of the connecting section C is cancelled to make it possible  
5 to insert the horizontally enlarged section T2 into the large-sized inner section 212 from the downward opening 214 in the upper structure U. In that case, the horizontal gap in the cuts 215 disposed in the outer periphery of the large-sized inner section 212 in the upper structure U is enlarged by elastic deformation of the outer periphery of the large-sized inner section  
10 212, enlarging the horizontal dimension of the downward opening 214, whereby the operation of inserting the horizontally enlarged section T2 into the large-sized inner section 212 is smoothly effected, and the receiving and holding of the horizontally enlarged section T2 in the large-sized inner section 212 is reliably effected by elastic contraction of the outer periphery  
15 of the large-sized inner section 212 including the downward opening 214.

In this state, the upper portion of the leg T1 and the horizontally enlarged section T2 of the golf tee T are inserted and held in the small-sized inner section 216 and the large-sized inner section 212, respectively, in the golf ball support body Sc, and downward separation of the golf tee T is  
20 prevented by the small-sized inner section 216, smaller in diameter than the horizontally enlarged section T2, while the separation preventive sections 226 provided in the upper portion of the large-sized inner section 212 are positioned on the upper side of the upper surface of the horizontally enlarged section T2 to prevent upward separation of the horizontally  
25 enlarged section T2. In this manner, the golf ball support body Sc is



attached to the upper portion of the golf tee T, so as to be ready to support a golf ball on the support projections 210a.

With the golf ball support body Sc attached to the upper portion of the golf tee T, if the connecting section C, as shown in Fig. 19, is bent by elastic deformation to displace the upper structure U temporally laterally outward, the horizontal gap in the cuts 215 is enlarged by elastic deformation of the outer periphery of the large-sized inner section 212, enlarging the horizontal dimension of the downward opening 214, whereby the operation of separating the horizontally enlarged section T2 from the large-sized inner section 212 is smoothly effected. Thereby, not only laterally but also upwardly can the laterally opened section 220 be sufficiently opened, so that the golf ball support body Sc can be removed from the golf tee T by upwardly separating the leg T1 from the small-sized inner section 216 of the lower holding section L through the laterally opened section 220.